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150 YEARS

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A divergent thought from experiences and unwanted repetitions of urban trends and suggestive plan recommendations for Hyderabad growth corridor development.

The prestigious Kaleswaram Lift Irrigation and future strength of Telangana to lead further regional planning efforts.

OpenSource is the current trend and planning to embrace the community of contributions as the knowledge share.

On the occasion of 150th birth anniversary of Mahatma, time to remember Sabarmati Ashram from the heritage point of view.

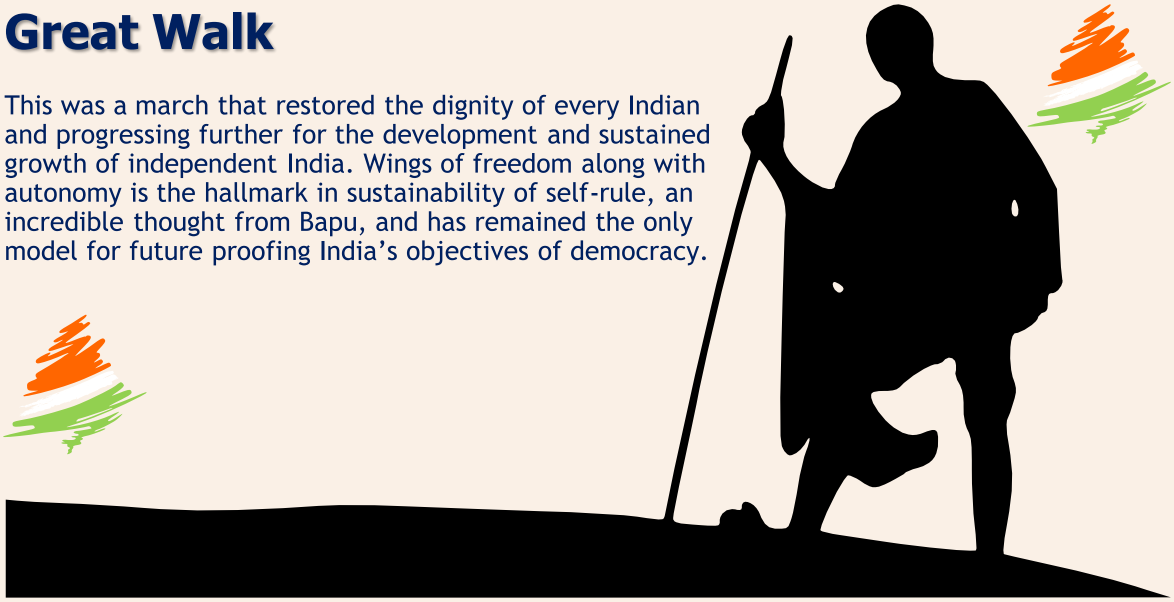
Self driving future with autonomous vehicles may become more intelligent in removing signals system in traffic management.

List that exhorts the great personalities and their contributions in urban planning works at different times.

City Protocol as an option to define city models for designing the development plans and plan management of resources.

Great Walk

This was a march that restored the dignity of every Indian and progressing further for the development and sustained growth of independent India. Wings of freedom along with autonomy is the hallmark in sustainability of self-rule, an incredible thought from Bapu, and has remained the only model for future proofing India's objectives of democracy.



Prime Minister Shri Narendra Modi urged people to fulfill Mahatma Gandhi's vision of Clean India. "The Swachh Bharat Abhiyan is a massive movement that seeks to create a Clean India. Cleanliness was very close to Mahatma Gandhi's heart. A clean India is the best tribute we can pay to Bapu when we celebrate his 150th birth anniversary in 2019. Mahatma Gandhi devoted his life so that India attains 'Swarajya'. Now the time has come to devote ourselves towards Swachchhata (cleanliness) of our motherland".

MoHUA conducted its third survey 'Swachh Survekshan - 2018' covering 4203 Cities including 61 Cantonment Boards. The ranking of cities, separately done for those with a population of one lakh or more (national ranking) and those below one lakh (state and zonal rankings), was based on assessment of progress from January 2017 till December 2017 (extended till January 2018 for Cantonment Boards) under Swachh Bharat Mission-Urban (SBM-U).

The objective of the survey is to encourage large scale citizen participation and create awareness amongst all sections of society about the importance of working together towards making towns and cities a better place to live in. Additionally, the survey also intends to foster a spirit of healthy competition among towns and cities to improve their service delivery to citizens, towards creating cleaner cities.

In order for cities to reap the maximum developmental benefits from the survey, concerted efforts are being taken to strengthen the capacities of the cities to understand the modalities and spirit of the survey. In addition to giving towns and cities more time to prepare for the survey, there will be intensive interactions with ULBs to familiarize them with the survey methodology, survey process and output indicators, and also clarifying their expectations from the survey.

In the cleanliness survey conducted by Government of India this year, Indore topped the list to become the cleanest city. Greater Hyderabad among cities with over one lakh population could better the neighboring states with 27th rank.

Mountains of Garbage

Urban trash is a phenomenon and with just only as-is dumping, the residue reaching the sky high in all Indian cities. With no structured policy over time, the dumping of garbage into scheduled sites without processing is mounting to be a big menace to be managed through an efficient urban policy. It is almost fifty to sixty years since the dumping grounds in metropolitan cities have been operational.

Alarming the rate at which urban garbage increasing phenomenally due to various factors of urban economies and sustained living. Currently, it is estimated that the urban per capita garbage collected is five to six time higher than that if rural India.

These hills might contain huge amounts of arsenic and toxic contents that were buried over time and has no way to dig and treat for better livable surrounds. And the dynamics of urban growth across all cities in India had moved beyond the identified garage dumping grounds, thus posing serious health problems to sprawls around these.

Huge quantities of methane generated from these mounds is either leaked to the atmosphere or fires are triggered in contact with burning residue and highly inflammable material of single use plastic.

An easily adaptable policy needed to evolve for not only cleaning the existing hills through a massive engineering initiative and also to a scheduled penalization of willful polluter for all categories of biodegradable, harmful chemical substances and highly combustive materials. The garbage collection shall have rate-card fixed against these contents from households. Added to the same, Waste-to-compost and bio-methanation plants is an investment from the local body to gradually clear landfill sites. ☙

Chairman's Desk

Efficient solid waste management directly refers to improved healthy living of urban population. There are proven to be less or minimal occupational hazards in urban jobs, but the two major threats haunting the urban living are pollution and solid waste.

Across India, though there is a high focus, the unhealthy garbage is becoming a menace. The local bodies exploring the ways for treating cost efficient ways for comprehensive treatment of collected garbage. For decades the local bodies have been trying varieties of options to improve the solid waste management in multiple of dimensions, by taking the cause from individual to bulk collection.

S. Devendar Reddy, Chairman, ITPI-TRC.

Urban Telangana collects about 2,500 metric tonnes of waste from urban local body range. It is growing at the rate of 5% every year. The efficiency of collection is 90% from the local bodies. Composition is observed as organic 55~60%, inorganic and recyclables 25%, paper 8.13%, plastic rubber 9.22%, metal and glass 01~1.5%, rags 4~4.5%, others 4% and remaining inert material 20~25%.

Telangana Pollution Control Board reports that the processing and disposal is still in the nascent stages, suggests for more improvements as requirement through comprehensive community participation and private investments opportunities.

Out of 6,243 TPD of MSW generated in the State — 4,324 TPD of MSW is processed in the existing Waste Processing facilities,

- M/s. Integrated Solid Waste Management Project (for Greater Hyderabad Municipal Corporation); 3,600 TPD.
- M/s. Shalivahana Power Projects Pvt., Ltd.,; 3,673 TPD (Department of MA&UD permitted quantity) presently the MSW is lifted from those municipalities located within Karimnagar, Adilabad & Nizamabad districts.
- Composting by Warangal & Suryapet Municipalities 51 TPD.

Telangana leads among all southern States with lowest percentage margins of differences between generated, collected and processed MSW,

- Generation Vs. Collection, 95%.
- Collection Vs. Processing, 73%.
- Generation Vs. Processing, 70%.

It is argued that the local bodies with lesser economic viability in treatment of MSW is a burden, the support system needed to be established to bring them at par with Telangana State best performed local bodies. The statistics indicate that there are incidents of severe backlog from these smaller municipalities where the local income generation has suffered due to various reasons, and public health had been the worst to suffer with subsequent influences of epidemics. It all matters on how much are the proposition of incentives be provided for MSW treatment and disposal, and the market preparedness for the recycled waste and also bio-degraded compost for the rural fringe of smaller towns who are the agrarian consumers.

There is a mounting burden in increase of MSW collection in the coming times, and divergent methodologies needed to be adapted to enable the local reuse of treated waste by establishing community processing centers, and with aggressive promotions by local governments. ☙

Will Westward of Hyderabad be a Bangalore Replica?

Vishwanath Sista

The Hyderabad Metropolitan Area is witnessing a rapid but lop-sided developments especially on the west of Hyderabad city going beyond Gachibowli, Financial District, Kokapet to the GOMs 111 areas and due course of time will gobble this protected area from the 'tidal wave' of Hyderabad's IT and ITES Hub. Many planners are blaming the rationalized and simplified building regulations for this phenomenon, and are apprehensive about the trend of developments. Many are predicting that the entire Western part of Hyderabad would meet the same fate of Bangalore. Is that going to be true? It is aggregable to a considerable extent.

The western quarter of Hyderabad admeasuring about 700 sq. km. and encompassing the local areas of erstwhile Serilingampally Municipality, Manikonda, Poppalaguda, Narsingi, Kokapet therefore would be having a population of 10 million in next 20 years and an employment of 25 lakhs in formal sector and about 20 lakhs in support or informal sector which is phenomenal. Can Hyderabad city cope with this trending phenomenon or become another Bangalore? This may well be in the reach of planned management, provided the State Government takes up with immediate effect the following Action Plans which need to be in place/ implemented within a five year time frame till the end of 2022.

a. Relinquish the Cyberabad Master Plan, the Growth Corridor Master Plan, HUDA Master Plan 2031 and the Metro Dev Plan 2031. Instead create a definite Structural Plan for the Hyderabad West covering the above area of about 700 Sq Km and take up Area Development Plans.
b. The areas covered under G. O. No. 111 shall prevail for watershed protection.
c. The Structural Plan should be a definite physical infrastructure and utilities development plan with emphasis on clear transportation network, daily commutation facilities (mass transportation from Hyderabad to other areas of Hyderabad West.)
b. There should be separate set of Development Regulations for Hyderabad West with height cap on all types of buildings (30 floors 0r 90 meters for IT/ Work Centers and 15 floors or 45 meters for others), insist on compulsory land pooling with inbuilt public amenities areas reservations and in-situ housing requirements, etc.
c. All developers/ land owners to be compulsorily be registered with the Sectoral Planning & development Authority.
d. All LRS and BPS cases to be stopped. Any development activity shall be subjected to separate rules for Hyderabad West to govern the urban growth.

> Dotted with swanky buildings that house the who's and who of global information technology firms, the Cyberabad skyline evokes comparisons with Silicon Valley. Full of marshy bushes, hillocks and agricultural fields not that long time ago, the region's hundreds of IT and BPO firms exported products and services worth ₹75,000 crore last financial year. — *The Hindu*.

Proposed Hyderabad West Plan

1. Hyderabad West area is about 700 Sq. Km. covering the areas of Patancheru, Ramachandrapuram, Pati Ghanpur, Kardanur, Bhanur, Edula Nagulapur, Mokila, Kondakal, Kollur, Kokapet, Tellapur, erstwhile Serilingampally Municipality, Manikonda, Narsingi, Poppalguda, Nanakramguda, and Gandipet.
2. Create a Special Sectoral Planning & Development Authority called Hyderabad West Development Authority (Apex body for Hyderabad West) and vesting it with facilitating/ undertaking all planning, development, physical and development of social infrastructure.
3. Transfer all public lands/ government lands to this Authority. Start with a Rs. 5000 Crores Seed Capital. Development control functions to be limited to land assemblage, land pooling, land subdivision/ amalgamation, area development plans, and special development schemes only. No day to day building permissions or enforcement responsibilities.
3. Create a separate municipal body for this area of Hyderabad West which should be given clear civic management functions with a seed capital of Rs. 1000 Crores for enabling complete local level development and maintenance functions, and also to facilitate all provisions of building permissions and enforcement functions.
4. All functional Departments/ line agencies units like water supply, drainage and sewerage, lakes protection & Conservation unit, electricity supply, public transport, telecommunications network should be made co-terminus with the limits of jurisdiction with the proposed Planning & Development Authority.
5. Replace the Cyberabad Master Plan, portion of the Growth Corridor Master Plan, erstwhile MCH Area Revised Development Plan, HUDA Revised Master Plan 2031, Metropolitan Development Plan 2031 for this Hyderabad West with a Structure Plan and 20 Area Development Plans covering areas mentioned above. Create separate Implementation Plan and Plan Monitoring Unit and all funds to be under a separate account and devolved by a constituted financial management unit, including for the Development Authority, Municipal Corporation, all line units, etc.
6. A seamless Metro Rail system should be developed by the Hyderabad Metro Rail Ltd. linking the following areas with other parts of Hyderabad with interchange between existing Metro lines/ MMTS System among Jubilee Hills, KBR Park peripheral links, Madhapur, Hafeezpet, Kondapur, Kothaguda, Durgam Cheruvu, Guttala Begumpet, Gachibowli, Gopanpally, Hyderabad Central University, BHEL Junction, Raidurg, Khajaguda, WIPRO Junction, Financial District, Kokapet, Poppalguda, Manikonda, Ibrahimbagh, Narsingi, Neknampur, Alkapuri, Shaikhpet, Toli Chowki, Mehdipatnam, Lunger Houz, Tellapur, Kollur, Nallagandla, Ramachandrapuram, Patancheru.
7. Develop separate and contiguous green tracks/ bicycle way system along with area-level parks/ water bodies etc.

Kaleswaram Lift Irrigation, Lifeline of Telangana Regional Development

K. Murlidhar Reddy

Though Telangana is bestowed with a very long banks of both Krishna and Godavari rivers, the higher elevation of being catchment for these rich water sources is a greater gravity disadvantage. It demands a miracle to recover from this shortcoming, and requiring a bigger plan in promotion of a massive engineering exercise for converting entire Telangana into an inland aquatic sustainable region.

Kaleswaram Lift Irrigation is a very bold step in planning to realize such dream for Telangana, and this project constitutes the Asia's largest surge pool ever built. The diversion of 180 TMC is one of the salient features, and from the flooding of 90 days during monsoon season in Godavari river. Hundreds of kilometers of canals covering the erstwhile 13 districts, tunnel works, barrages across Godavari river, very powerful lifts and underground pumphouses are the composition of nearly 70% of declared to have been completed project. The World's biggest lift irrigation project from the depth of 335 meters by excavating 2.16 million cubic meters of soil and rocks to construct surge pools to store 20 million liters, and a pump house that can lift-out up to 3 TMC of water every day. This also would require digging of 15 reservoirs in erstwhile 13 districts, which will have the total capacity of holding 145 TMC. All these reservoirs would be interconnected through a network of tunnels running through 203 KM.

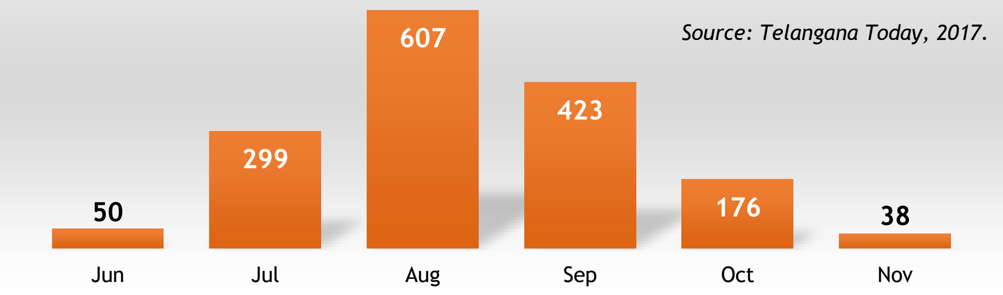
Barrages	3
Reservoirs	15
Lifts	20
Storage Capacity	145 TMC
Water Usage	240 TMC
Canals	1532 K.M.
Tunnels	203 K.M.
Pump Houses	82
Electricity Requirement	4600 M.W.
Land Acquisition	80,000 Acres
Forest Land	3050 Hectares
Displaced Families	6,200
Secured Irrigation	18.25 Lakh Acres
Stabilization	18.83 Lakh Acres

Kaleshwaram project would have three barrages at Medigadda, Annaram and Sundilla and reservoirs at another 15 places. The three barrages would maintain the storage capacity of over 28 TMC together and the reservoirs would have another 157 TMC. The Kaleshwaram project requires 4,600 MW power for lifting water in different stages including, 113 meters till Yellampally reservoir, and from Yellampally to be lifted till Mid Manair and from there to Anantagiri, Mallannasagar, Imambad reservoirs. From Mallannasagar, the water would flow through gravity to Upper Manair and reservoirs in Nizamabad and Adilabad districts. The proposal has been to divide the work into 28 packages in six links, including five packages for the first three barrages.

Project Type

Type	Project	Telangana	Maharashtra	AP (Krishna)	Telangana (Krishna)	TMC
State	Kaleswaram - Ph1	240	-	-	-	240
National	Kaleswaram - Ph2	250	50	50	50	400

Water Availability in TMC

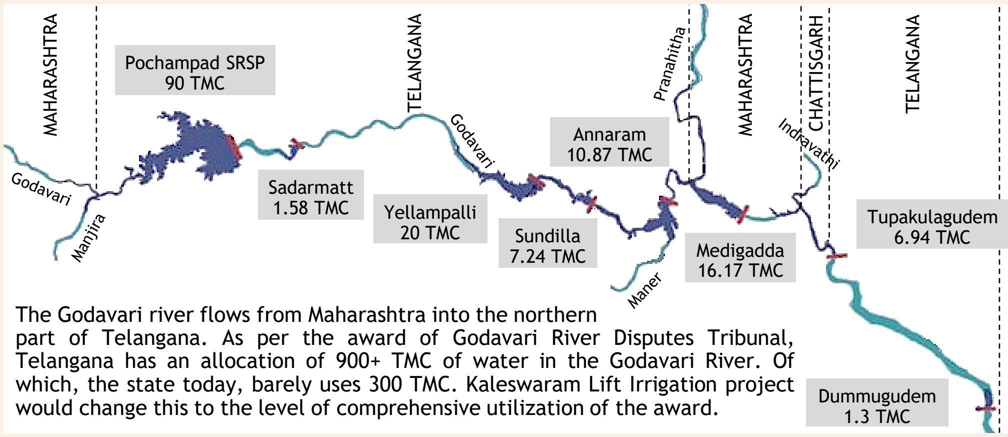


Source: Telangana Today, 2017.

It is the costliest irrigation project undertaken by any state in India so far. The project is totally being funded by Telangana Government, designed and built by engineers from the State, a claim of indigenous in its entirety. It is a pledge to bring the availability of water for irrigation and tertiary needs of drinking water purposes.

By the time Phase II is complete, it helps Telangana utilize further 250-300 TMC in access to the Phase I plan. It is also an ambition by achieving the penultimate goal to coverage of link from Kaleswaram to Srisailam through Dindi reservoir, serves worst of arid regions in Nalgonda and Mahbubnagar.

The project analysis is estimating to the annual benefits from this project of Rs. 21,521 crore against the expenditure of Rs. 13,923 crore, and the cost-benefit ratio to 1:1.55. Upon the completion of this project, and starts reaping targeted benefits, a big metamorphosis would take place in the socio-economic situation of people, and would become a massive growth engine for progressive Telangana.



The Godavari river flows from Maharashtra into the northern part of Telangana. As per the award of Godavari River Disputes Tribunal, Telangana has an allocation of 900+ TMC of water in the Godavari River. Of which, the state today, barely uses 300 TMC. Kaleswaram Lift Irrigation project would change this to the level of comprehensive utilization of the award.

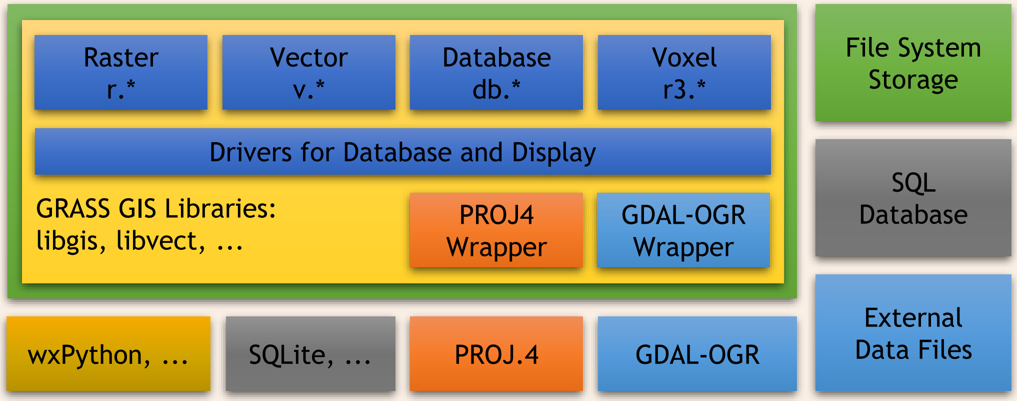
GIS that Enhances the Algorithmic Intellect in User

K. Ravi Kumar Reddy

Geographical Information Systems are synonymous to mapping as widely believed by urban and regional planners. Hitherto the appeal is for graphic representation of classic master plans and respective parcels, the inherent capability must revolve around the ability to build native requirements of model building across mapped themes.

GRASS, Geographic Resources Analysis Support System, is truly an OpenSource initiative by Construction Engineering Research Laboratory under U.S. Army Corps of Engineers. Intended purpose in 1984 had been the use by United States military for land management and environmental planning. Over time, GRASS transformed into a powerful software application with a wide range of capabilities in many different spheres of scientific research and engineering. It is available for downloads on varied operating systems of Mac OSX, Windows and Linux under GNU GPL in version 5.0. Apart from the binaries for the target operating platforms, the source code is also distriuted under the same license on free to use basis and professional contributions. Current stable build version for download is long term support (LTS) GRASS GIS 7.4 release.

https://grass.osgeo.org/



GRASS GIS 7.4 Architecture

The GRASS binaries, source code and management of contributions is done by Open Source Geospatial Foundation (OSGeo), and is declared as non-profit organization whose mission is to foster global adoption of open geospatial technology by being an inclusive software foundation devoted to an open philosophy and participatory community driven development.

There is ample scope for developing extensions to GRASS GIS using the Linux version source code, where the Windows port is enabled through Cygwin, a way to run native Linux applications on Windows, and must rebuild the application from source. It is observed considerably easier to develop and test the extension tools (new models) which would be very specific to user requirements. The output could well be a new theme either as raster or vector to the same calibrated map projection.

Functionally, the map region could be defined for importing themes of image and vector data with the configured region geodetic for Lambert Conformal Conic (LCC) projection and for Himalayan region with spheroid ‘Everest’ and datum ‘India’. The applied region is calibrated with few more additional parameters of a) latitude of origin, b) longitude of central meridian, c) false easting at central meridian, d) false nothing at origin and e) standard parallels — *more information is available with GSI*. The map projection for National Natural Resource Management System (NNRMS) suggestive ‘National Spatial Framework for India’ is supported by calibrating the datum WGS84.

It is the flexibility and programmability supported by the core GRASS GIS platform using the standard libraries with independent extensions by user through ‘C’ or ‘C++’. This enables the user for varied modeling capabilities through data transformations, and the themes as selectable for extensive data integration and applied formulae for result oriented output. The model preparation is the intellectual activity by the user. If the models are unique and can be applied to many situations across the spatial world, the source code could be contributed to OSGeo as upgraded to next GNU revisions.

GRASS GIS offers powerful capabilities, including DTM and point data analysis, visualization, image processing, map creation, geocoding, geostatistics, watershed analysis, erosion modeling, landscape structure analysis, temporal framework, etc. The software also supports various database interfaces, including SQLite, DBF, PostgreSQL, ODBC and MySQL. The latest release of the software by default manages attributes in SQLite format.

The platform supports workgroups using the concept of mapset/ location and is able to share data over the Network File System (NFS). Teams can also keep locations on a central server with underlying mapsets and work simultaneously in the same project DB, and a needed multi-user environment.

GRASS GIS was used by the author for preparation of wireless radio plans for few towns in India using the data themes of a) land use, b) proximity, c) population density, d) topography, and e) socio-economic indicators.

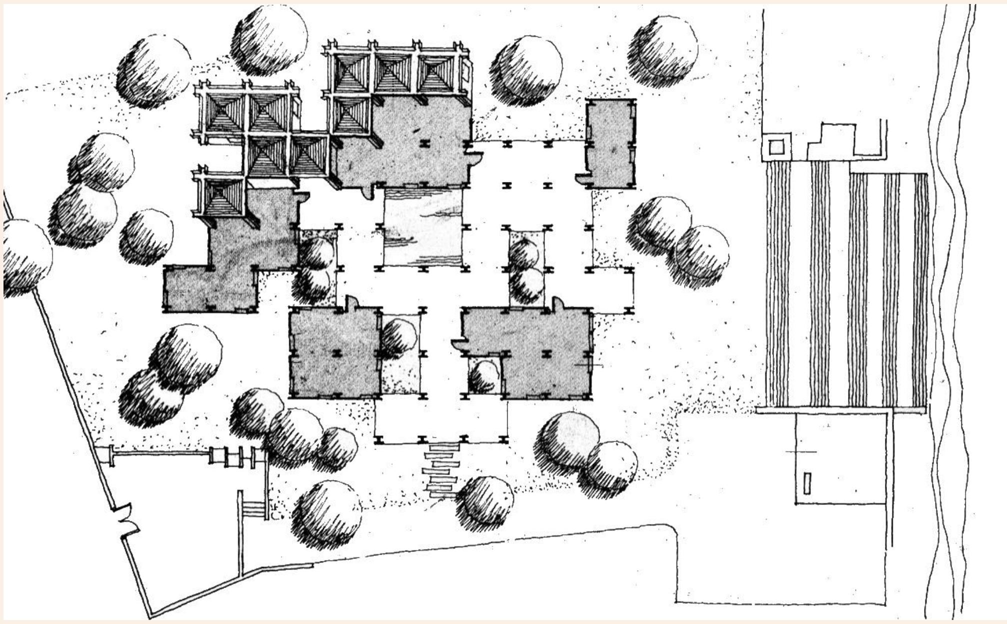
Heritage Scape

Vasantha Sobha Turaga

The icon on the banks of Sabarmati River at Ahmedabad, Sabarmati Ashram had witnessed the history of the Indian independence struggle. Mahatma recited the phrases of self rule from this same place, and reverberates through the music of waterflow through the river. It is from this location Gandhiji gave a call for the famous Dandi March. The approach road has been aptly named as Ashram Road, witnessing the economic growth through the city.

Gandhi Smarak Sangrahalaya, an extension to the Ashram, was designed by Shri. Charles Correa (1930-2015). The principles followed during his design approach have been community living and simplicity of Gandhian life. The analogy had been adopted from the living of tribes from Bunny, a far end region of Kutch. It is a flow of function through the usage of space in various forms of purpose, which is largely asymmetric. The core theme is a traditional village model which is non-industrial and a non-urban. Correa started the design work in 1958 and the complex is open to public use since 1963.

The post-independence architecture and design interventions by Charles Correa were sensitively made to fit into the existing urban setting, reflecting continuity and tradition of typical community interactive space.

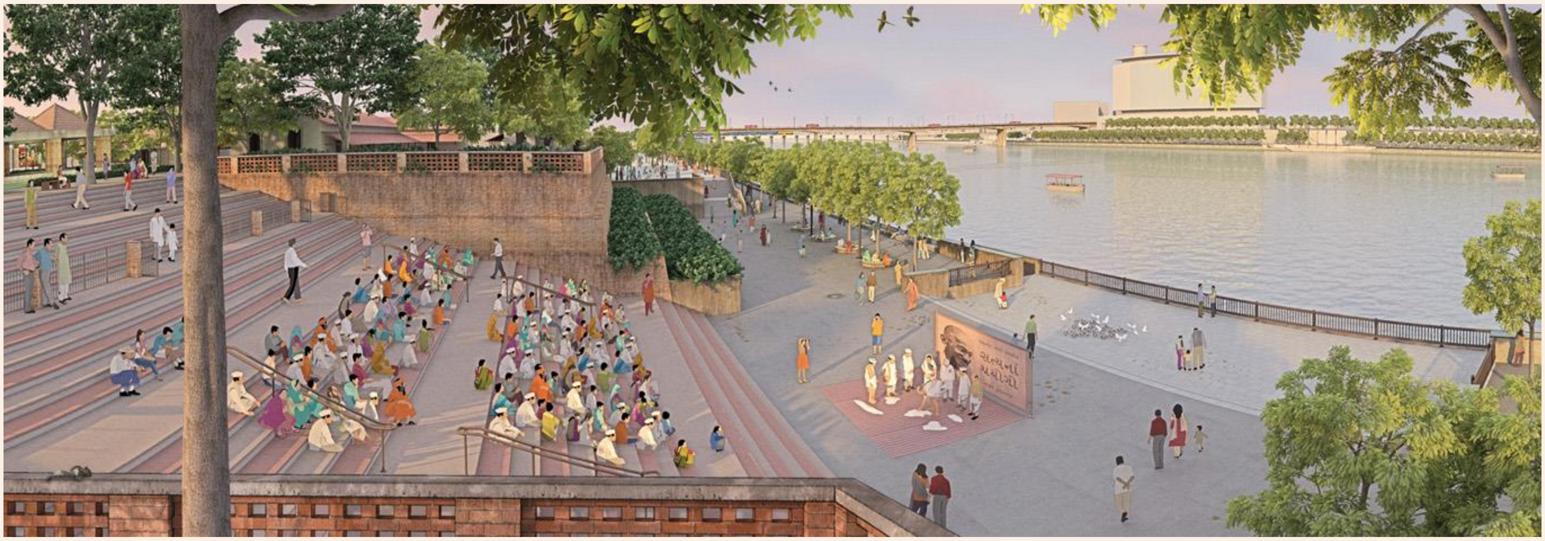


Layout Plan of Gandhi Smarak Sangrahalaya with riverfront.

As was the Gandhian way of life, down to earth and deep connected with nature, the interface between ashram and the Sabarmati river front in the old ashram were the steps took oneself down to the river. Correa's design importantly extended Ghats, in its expansion plans.

It can be said that Correa made a beginning of the new urban design on the river side through Ghats, which has been carried forward in the Sabarmati Riverfront Development taken up by the Ahmedabad city authorities in the recent years. It is now gained the prominence as one of the important elements in Sabarmati Riverfront Development programme.

Correa's design reflects the Gandhian philosophy of community living with simplicity, and a successful creation of a world in itself by bringing in a touch of the village into an entirely urban situation. Built spaces and verandahs flow into open landscape, and the play of light and shade from louvres add character of calm and peace, making visitors to dwell deeper into Gandhiji's life and messages. The appearance is repetitive of the original buildings at Ashram of tiled roofs, brick walls and stone flooring. ☙



Visualization of the plaza at Gandhi Ashram in the evening, artist's digital impression. Image Courtesy: Sabarmati Riverfront Development Corporation Ltd.

The Death of Traffic Lights, Research and Advancements in Traffic Engineering

Researchers at the Massachusetts Institute of Technology (MIT), the Swiss Institute of Technology (ETHZ), and the Italian National Research Council (CNR) have developed vehicle priority slot-based intersections that may outplay traditional traffic lights, which were invented since the days of horse carriages, and the innovation can significantly reduce queues and delays. This idea is based on a scenario where the sensor-laden vehicles pass through busy traffic intersections by communicating and remaining at a safe distance from each other, rather than grinding to a halt at traffic lights.

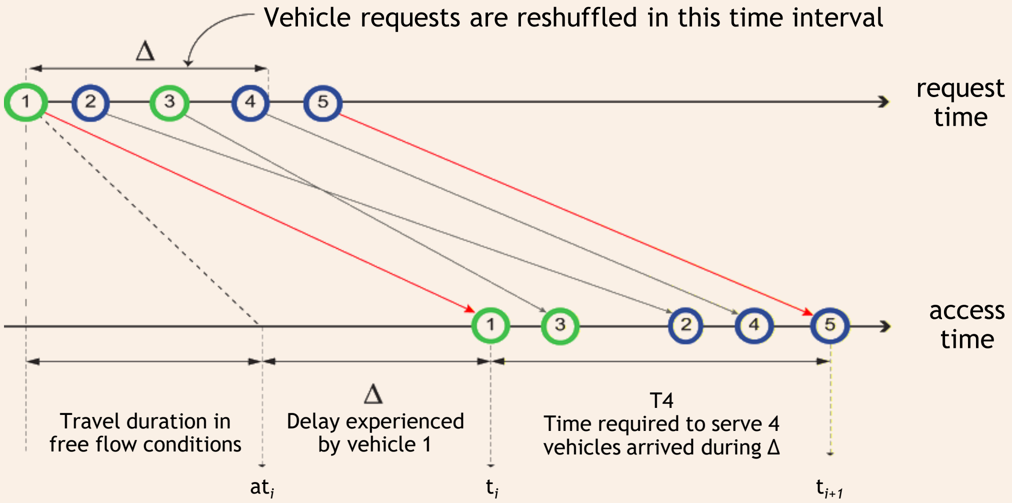
“Traffic intersections are particularly complex spaces, because you have two flows of traffic competing for the same piece of real estate,” says Professor Carlo Ratti, Director of the MIT Senseable City Lab, which initiated the study. “But a slot-based system moves the focus from the traffic flow level to the vehicle level. Ultimately, it’s a much more efficient system, because vehicles will get to an intersection exactly when there is a slot available to them.”

Slot-based intersections are similar to slot-based management systems as similar to air-traffic control. Upon approaching an intersection, a vehicle automatically contacts a traffic management system to request access. Each self-driving vehicle is then assigned an individualized time or slot to enter the intersection. Stop and go is largely avoided, which has the effect of reducing pollutants and greenhouse gases caused by acceleration and deceleration cycles.

The MIT Senseable City Lab Started in 2005, and is a multidisciplinary research group that studies the interface between cities, people, and technologies. It investigates how the ubiquity of digital devices and the various telecommunication networks that augment our cities are impacting urban living. With an overall goal of anticipating future trends, the Lab bring together researchers from many academic disciplines to work on groundbreaking ideas and innovative real-world demonstrations. This research is undertaken in partnership with cities, the private sector and other universities. Through this collaborative approach would reveal how a new, rapidly expanding network of digital devices is serving to modify the traditional principles of understanding, describing and inhabiting cities.

Furthermore, slot-based intersections are flexible and can easily accommodate pedestrian and bicycle crossing with vehicular traffic.

Results show that intersections providing real-time slot allocation might double the number of vehicles that an intersection with traffic lights can manage. This could have a major impact on the road network of a given city. "Travel and waiting times would be considerably reduced and fuel consumption would go down,” said Professor Dirk Helbing of the ETHZ. “This would make a contribution to the reduction of emissions and climate change. Overall, people would benefit, the environment would benefit, and cities would become more livable.”


Vehicle requests are reshuffled in this time interval
Δ
1
2
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“Transitioning from traffic light to slot-based system could dramatically improve intersection performance, with traffic volume queues vanishing and travel delays cut to almost zero,” said Paolo Santi, a Research Scientist at the MIT Senseable City Lab and a member of the Italian National Research Council.

“It is important that to start looking into the impact of self-driving vehicles at the city level as soon as possible,” added Ratti. “The lifetime of today’s road infrastructure is many decades and it will certainly be impacted by the mobility disruptions brought in by new technologies.”

Intersections are the physical place where access to a common resource must be coordinated between vehicles with incompatible paths. As such, they are natural bottlenecks and play a key role in the dynamics of the network. Coordination of vehicles is achieved by means of a switching process, the purpose of which is to resolve conflicts between incompatible flows, while optimizing some system performance metric on interactions. The state-of-the-art embodiment of this switching process is the well-known traffic light.

The research team was led by Paolo Santi and included Remi Tachet, Stanislav Sobolevsky and Carlo Ratti at the MIT Senseable City Lab, Emilio Frazzoli and Luis Reyes-Castro at the MIT Laboratory for Information and Decision Systems, and Dirk Helbing at the Swiss Institute of Technology.

Research activities have been supported by ENEL Foundation and the Singapore-MIT Alliance for Research and Technology (SMART).

Understanding the dynamics of networks composed of a large number of interfacing elements is an important, but highly complicated, scientific challenge with prominent real-world applications, such as the study of traffic flows in cities. Traffic management is an arduous problem characterized by many elements of vehicles and traffic lights, that are highly constrained in space and time.

(*Text extracts from the press material distributed by MIT Senseable City Lab and scheduled publication of ‘Revisiting Street Intersections Using Slot-Based Systems, 2016’*). ☙

Waste to Power Generation, an Argument on Delhi Experiments

East Delhi Municipal Corporation, under PPP model has operationalized a waste to energy plant since 2015. This is built and managed by IL&FS Environment at the site of Ghazipur landfill, which receives more than 2000 tons per day of Delhi's MSW.

It provides a scientific solution to address some of the environmental, health and safety hazards posed by the 29 hectare dumping which contains 12 million tonnes of accumulated garbage over decades, and Ghazipur garbage dump is now 65 meters tall which is just 8 meters less than that of Qutub Minar's height. The details about innovations and standards compliance,

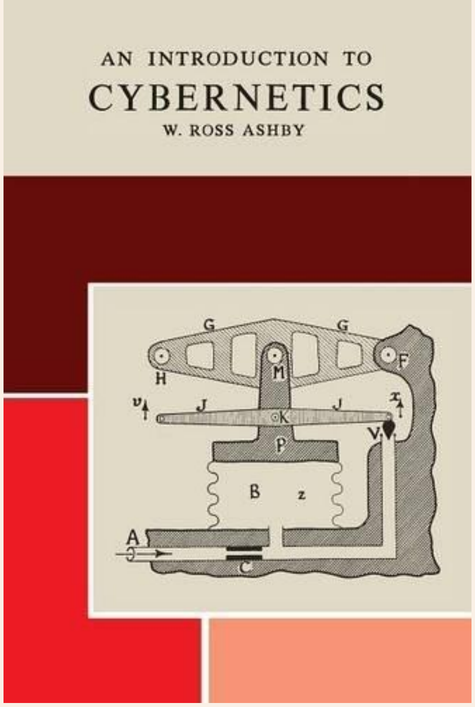
- An elaborate seven-stage pre-processing section in the plant converts waste to Refuse Derived Fuel of high calorific value. Set up to initially process 1300 TPD of municipal solid waste and generate 12 MW of Green Power, the plant is built with a capacity to process 2000 TPD of waste.
- The plant will contribute to combating global warming by mitigating 8.2 million tons of greenhouse gases over the life of the project.
- The plant is India's first WtE plant compliant with Euro norms for emission along with the highest standards of pollution control measures. To implement the highest levels of transparency, a Continuous Emission Monitoring System (CEMS) enables online viewing of key emission parameters on real time basis.
- Apart from positively impacting the health and hygiene of the nearby communities by processing fresh municipal solid waste, the project's initiatives for the generation of employment, alternatives on livelihoods and functional literacy are creating societal benefits. The project will also help in saving 260 acres of scarce urban land valued at over Rs. 2000 crores.

Contradictory to the above, the first WtE plant for handling 300 TPD and generating 3.75 MW of electricity was set up in Timarpur by a Danish firm in 1980s, but had to shut down in a short time due to very low calorific value of the waste and the high proportion of inert materials.

The next big project is the Okhla WtE plant commissioned in 2012 for handling 1950 TPD and generating 15 MW of electricity, and operated by the Jindal Group. The project has been mired in controversy from the outset. The initial consent by environmental authorities was given on the basis that the Plant would operate on refuse-derived fuel (RDF) and generate energy from biogas, but the operators later switched to incineration. A long-standing case pending with the National Green Tribunal finally ended in Feb' 2017, and the verdict allowing continuing operations of the plant based on what the Tribunal observed evidence of no air pollution by the plant since 2014.

Though WtEs are an option for processing the MSW in case of Indian cities, the alternative methods of reuse also needing to be highlighted by environmentalists and public health engineers in diversifying the purpose from just electricity generation to recirculation of residue in solid waste for industrial materials and potentially distributable compost in replacement to artificial manures. Research to enhance the chemical technology that shall help solve management of MSW constituents in a more environment friendly manner, while composite systems than energy alone.

Book Review



An Introduction to Cybernetics, William Ross Ashby, Martino Fine Books, 2015 reprint of 1956.

One of the best books of this century and relevant to today’s context of knowledge applications, cybernetics is here defined as ‘the science of control and communication, in the animal and the machine’ in a word, as the art of steersmanship; and this book will interest all who are enthusiasts of cybernetics theory and applications, communication theory and methods for regulation and control. William Ross Ashby (1903-1972) was an English psychiatrist and a pioneer in cybernetics, the study of complex systems. His two books, ‘Design for a Brain’ and ‘An Introduction to Cybernetics’, were landmark works, and introduced exact and logical thinking into the nascent discipline and were highly influential.

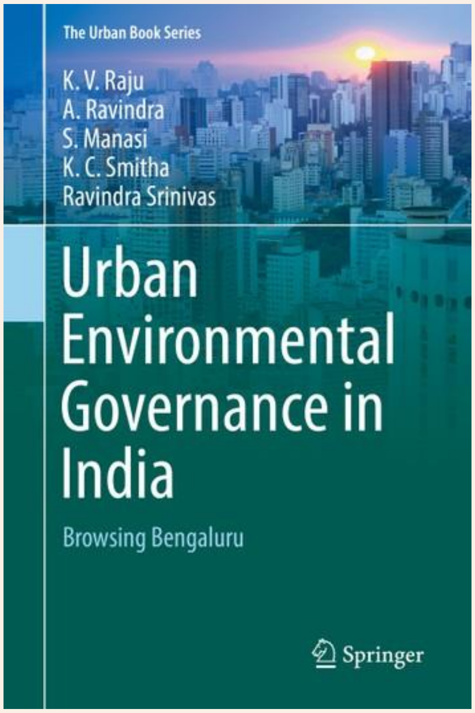
Contents include — What is New, Change, The Determinate Machine, The Machine with Input, Stability, The Black Box, Quantity of Variety, Transmission of Variety, Incessant Transmission, Regulation in Biological Systems, Requisite Variety, The Error-controlled Regulator, Regulating the Very Large System and Amplifying Regulation.

It is readable, has a wealth of examples and exercises, is painstakingly simple and clear; and although the treatment is essentially mathematical no special demands are made on the reader beyond ability to follow a table or a graph. It is a book for non-specialist; and as such easily the best book on its subject till date.

Though Norbert Wiener derived the terms ‘cybernetics’, Ashby conceives the subject as a new sort of ‘theory of machines’, which is unlike the study usually known by that name in that it is concerned not with cogs and levers but with any sort of system which undergoes determinate changes of state. A machine isolated from its environment can be completely specified by listing its possible internal states and saying for each one of them what change of state will result in succeeding time-interval. The study of the behavioural properties of a machine conceived in the way is clearly a matter of pure mathematics or logic. The book goes on to consider reaction with environment, feedback and stability, 'variety', coupling of machines, and automatic regulation and control.

Although the technical terms are all drawn from modern engineering, it is clear from a glance that a much wider application is intended. This is shown more clearly by examples, which are often biological as mechanical, and further touch topics as diverse as traffic-lights, tea-tasting, card tricks and the exorcising of ghosts. They sometime resemble problems of that no-man's-land between mathematics and logic, typified in the 'puzzle' columns of periodicals. Other clearly resemble those logic text books. The richness of examples determine the subject from the perspective of symbolic logic. In fact, the diversity of examples reflect the diversity of cybernetics.

It has become all the more relevant for planners to learn the way systems behave, and the onset of smart cities expected to strategize infrastructure services based on device sensing, and when development plans are expected to define automation through IoT. ☙



Urban Environmental Governance in India, K. V. Raju, A. Ravindra, S. Manasi, K. C. Smitha, Ravindra Srinivas, Springer (Urban Book Series),, 2018.

This book aims to identify the challenges presented by current urban environmental governance practices in fast growing Indian cities, to propose changes to the current governance implementation strategies, and to explore the best practices to achieve sustainable urban models through Indian and global perspectives. With a focus on the city of Bengaluru, the book draws on extensive reviews of literature and data to present current trends and statuses of environmental resource use in growing urban centers of India. The book analyzes the situations that impact urban environmental governance decisions and outcomes and proposes solutions to address these issues for long-term sustainability. The Policy makers, researchers, academicians and practitioners of development policies in environmental politics and urban governance may find this work of great interest. ☙

In 2003, W. Ross Ashby's family gave his journals, papers, and correspondence to the British Library, London. The link for the PDF can be found at Wiki, https://en.wikipedia.org/wiki/W._Ross_Ashby

Editor's Choice

[Reprint from Wiki, Works in urban planning and their masters]

- 332 BC, Dinocrates; Alexandria, Egypt.
- 408 BC, Hippodamus of Miletus; Piraeus, Thurii, Rhodes.
- 1450 AD, Nezahualcoyotl; Texcoco (altepetl), Aztec Mexico.
- 1590, Tokugawa Leyasu, Tokugawa Hidetada, Tokugawa Lemitsu, Takatora Todo; Edo, later Tokyo.
- 1666, Christopher Wren; London.
- 1681, Johan Caspar von Cicignon; Trondheim.
- 1682, William Penn and Thomas Holme; Philadelphia.
- 1727, Maharaja Jai Singh II; Astronomer, City Planner, Jaipur.
- 1791, Peter Charles L'Enfant and Andrew Ellicott; Washington, D.C.
- 1805, Augustus Brevoort Woodward; Detroit.
- 1811, Gouverneur Morris, John Rutherfurd, and Simeon De Witt; Commissioners' Plan of New York.
- 1838, Joseph Smith and later Brigham Young; several Mormon settlements including Nauvoo, Illinois and Salt Lake City.
- 1853, Georges—Eugène Haussmann; responsible for the broad avenues of Paris.
- 1859, Ildefons Cerdà; Planner of the L'Eixample district of Barcelona.
- 1880, Solon Spencer Beman and George Pullman; Pullman, Chicago
- 1880, Pedro Benoit; La Plata, Argentina.
- 1882, Arturo Soria y Mata; the Ciudad Lineal, Madrid.
- 1898, Ebenezer Howard; Garden city movement.
- 1901, Charles Follen McKim; Washington, D.C. revised plan.
- 1909, Daniel Burnham; Chicago.
- 1912, Walter Burley Griffin; Canberra.
- 1912, Johan Albrecht Ehrenström; Helsinki.
- 1920~1932, Richard Kaufmann; Haifa, Ramat Gan, Afula, Herzliya, Jerusalem.
- 1924, Andrew Randall Cobb and Thomas Adams; Corner Brook, Newfoundland.
- 1924, Clarence Stein; Sunnyside Gardens, Queens, New York.
- 1925, Ernst May; city plan and housing units in Frankfurt including Siedlung Römerstadt.
- 1927~1929, Patrick Geddes; Tel Aviv.
- 1927, Bruno Taut; Hufeisensiedlung (Horseshoe Projects), Berlin.
- 1928, Henry Wright; Radburn, New Jersey.
- 1930, Robert Moses; responsible for the urban renewal of New York.
- 1930, Ernst May; Magnitogorsk and some 20 other urban projects in the Soviet Union.
- 1935, Frank Lloyd Wright; Broadacre City (Only a concept).
- 1935~1981, Eldridge Lovelace; many US cities.
- 1938, Donald Gibson; Coventry, England.
- 1942, Arthur Korn and Felix Samuely; MARS plan for London.
- 1950, Le Corbusier; Chandigarh, India.
- 1952, Macklin Hancock; Don Mills, Ontario.
- 1955, Stanley Wardley; Bradford, Yorkshire, England.
- 1957, Lucio Costa; Brasília, Brazil.
- 1958, Ludwig Mies van der Rohe, Ludwig Hilberseimer, Alfred Caldwell; Lafayette Park, Detroit.
- 1960, Edmund Bacon; engaged in the redevelopment of Philadelphia.
- 1960, William Pereira; Irvine, California.
- 1960, Konstantinos Doxiadis; Islamabad, Pakistan.
- 1963, Dariush Borbor; Tehran, Iran
- 1963, Mort Hoppenfeld, James Rouse; Columbia, Maryland.
- 1964, Jaime Lerner; Curitiba, Brazil (Transportation and land use combination).
- 1964, Robert E. Simon; Reston, Virginia.
- 1968, Agustín Landa Verdugo; Cancún, Mexico.
- 1970, Paolo Soleri; Arcosanti, Arizona, as well as his concept of arcologies.
- 1970, William Pereira, Ian McHarg; The Woodlands, Texas.
- 1971, H. K. Mewada, Prakash M. Apte; Gandhinagar, Gujarat, India.
- 1972, Constantinos A. Doxiadis; Riyadh, Saudi Arabia.
- 1973, Moshe Safdie; Coldspring New Town, Baltimore.
- 1978, J. Michael Cobb; Jubail New Industrial City, Jubail, Saudi Arabia.
- 1980, Stanton Eckstut; Battery Park City, New York City.
- 1984, Andrés Duany, Elizabeth Plater Zyberk; Seaside, Florida.
- 1990, Peter Calthorpe; Laguna West, California.
- 1992, Vladimir Arana; Chorrillos District, Lima, Peru.
- 1999, Michael E. Arth; New pedestrianism, Downtown DeLand, Florida's Garden District (2001).
- 2002, Rick Abelson; Sylvia Park, Auckland, New Zealand.
- 2003, Christopher Benninger; Thimphu, Bhutan.
- 2006, Steven Bingler; New Orleans (Unified New Orleans Plan).
- 2007, Such Chandhiok; Delhi, India, & Alberta, Canada. ☙

[Courtesy, City Protocol Society on scheduled artifact of City Anatomy v2]

What is the City Protocol?

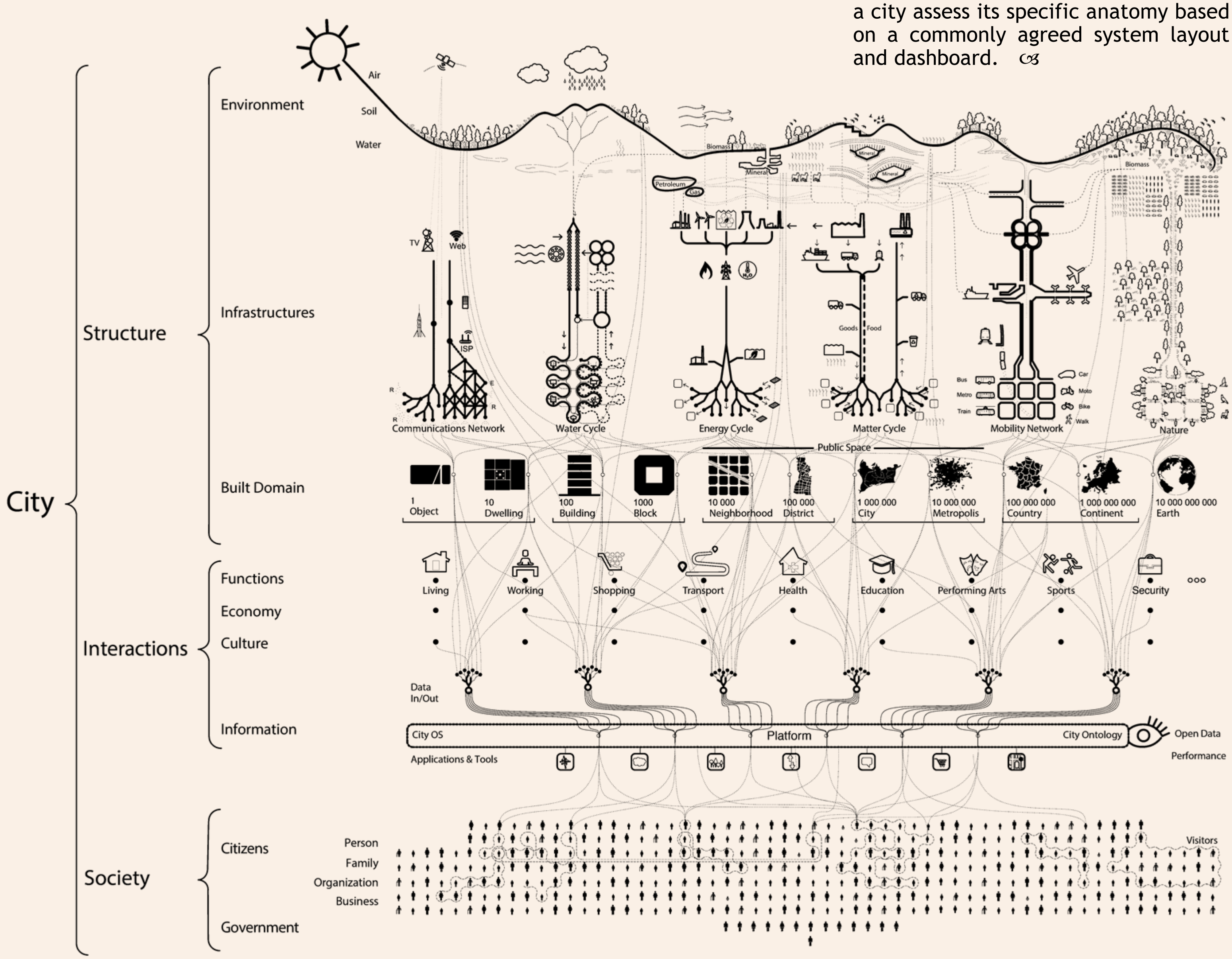
The City Protocol is a common communications vehicle and a collaborative innovation framework that fosters city-centric solutions that benefit citizens and their quality of life. It also seeks to better define a common systems view for cities of any size or type, and then embraces or develops protocols that will help innovators create - and modern cities deploy – cross-sectorial solutions that can connect and/ or break city silos. As a consequence, innovators enjoy a robust market for their solutions, and cities enjoy solution choice, reduced cost and risk, and increased collaboration and learning – all while supporting the development of a science of cities. City Protocol also aims at working across diverse cities by interconnecting them and ultimately creating the Internet of Cities.

Application of City Anatomy

City Anatomy provides a hierarchically sound and established description, nomenclature, identification, and classification of all city systems, subsystems and interactions, a ready-to-use city taxonomy for any city and city model to express its livability model from forward-thinking and game-changing projects, policies and practices. It is designed as a common tool which can be applied to facilitate city initiatives related to the core organizing activities for governance of cities, evaluation and transformation.

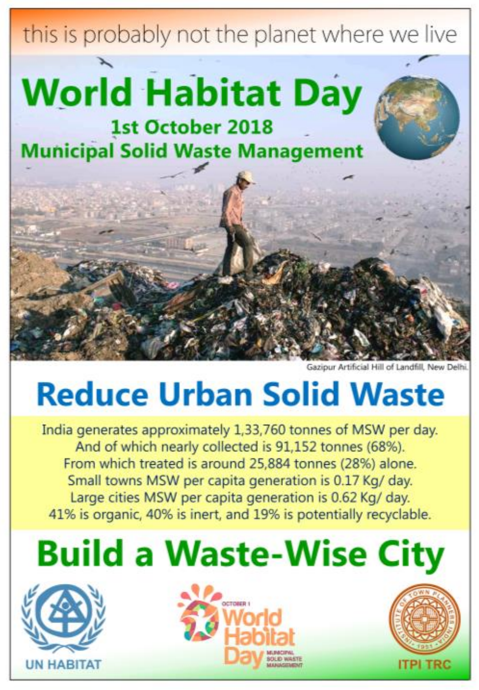
Some synergy between the thought process in Ekistics by Constantinos A. Doxiadis and the City Protocol for appropriate parametrization for cities and habitat of varied types, and applicability of distributed resources to the scale and size based on usage demand.

Descriptive taxonomy in City Anatomy would help build governance by providing a common language and model for broad Internet of Things as it applies to cities. It supports a framework for evaluation which helps a city assess its specific anatomy based on a commonly agreed system layout and dashboard. ☙



News Makers

On 29th Sept. 2018, the poster on the occasion of World Habitat Day released by Shri. S. Devendar Reddy, Chairman, ITPI Telangana Regional Chapter, and further distributed to institutions across Hyderabad and Telangana.


this is probably not the planet where we live
World Habitat Day
1st October 2018
Municipal Solid Waste Management
Gazipur Artificial Hill of Landfill, New Delhi.
Reduce Urban Solid Waste
Build a Waste-Wise City
UN HABITAT
October 1
World Habitat Day
Municipal Solid Waste Management
ITPI TRC

India generates approximately 1,33,760 tonnes of MSW per day.
And of which nearly collected is 91,152 tonnes (68%).
From which treated is around 25,884 tonnes (28%) alone.
Small towns MSW per capita generation is 0.17 Kg/ day.
Large cities MSW per capita generation is 0.62 Kg/ day.
41% is organic, 40% is inert, and 19% is potentially recyclable.

Theme of this year WHD is MSW and the efficient management of collection, processing and disposal. It is also the promotion of optimizing the solid waste generation from the household to minimize and segregate at origin to reduce the over all burden by municipal local bodies.

Norwegian Embassy in Delhi is the first to go complete green, and is ready for inauguration by their Prime Minister, Mrs. Erna Solberg, in Jan. 2019. Water in the sprinklers is the recycled by an in-house sewage treatment plant. Strict rules are in place to make sure the segregation is first done by diplomats and employees themselves, and the solid waste is sold to the local recycling companies, and four tonnes of recycled paper have been the exchange for 500 notebooks. ⁂

Esteemed members of ITPI-TRC are requested to send invaluable comments/ suggestions to itpitrc1@gmail.com with the subject of 'News Letter Committee', which would enable us to improve the contents and coverage further.

— Editor.

Shri. B. Pradeep Kumar received Dr. A P J Abdul Kalam Excellency Award for 2018 from the Hon'ble Shri. Konijeti Rosaiah, Former Governor Tamil Nadu, organized by Mega City Nava Kala Vedika and Mother Foundation Hyderabad.

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